June 13, 2011

Dr. Roberta White, Scientific Director
U.S. Department of Veterans' Affairs
810 Vermont Avenue NW
Washington, DC 20420-0002

Dear Dr White & the Committee on Gulf War Veterans' Illnesses:

Thank you for the opportunity to present written statements in preparation for the Research Advisory Committee on Gulf War Veterans' Illnesses meeting on June 27-28, 2011. The Society of Women's Health Research (SWHR) appreciates this chance to contribute comments on the importance of analyzing sex-based biological differences, as well as gender-specific social experiences in the care of all veterans – both male and female. By approaching the study of Gulf War Illnesses and other multi-symptom conditions with an understanding of underlying sex-based differences, new research and targeted analysis will allow us all to better understand and personalize care for women and men for a variety of disorders, especially those involving auto-immunity.

Since 1990, the SWHR has served in the nation's capital as a thought leader in research on sex differences, improving women's health through advocacy, education, and research. In this letter, we present recent findings and discourse in the medical and scientific communities to demonstrate the importance of sex-based biological research when assessing Veterans' health.

Through the Environmental Epidemiology Service, the War Related Illness and Injury Study Center, and affiliations with the Institute of Medicine, the Department of Veterans Affairs clearly established an interest in differentiating between the health of male and female veterans. In the 2006 review "The State of Women Veterans' Health Research," funded by VA Office of Research and Development Service, the investigators acknowledged that veteran women have health needs that differ from those of men because of:

- Different types of military experiences
- Increased prevalence of certain conditions in women
- Different manifestations of disease in women as compared with men
- Gender-specific issues that solely affect women

These are important recognitions, but they must be explored and applied to new research where sex and gender differences may impact responses and outcomes. As illuminated by the 2006 review, there has been a heavy focus in past publications on psychiatric illnesses (50/182 articles) and emotional disorders (38/182 articles), perhaps at the expense of other important medical topics (Goldzweig et. al., J Gen Intern Med, 2006). For example:

- Female Gulf War veterans are almost three times more likely to have a child with a likely birth defect than non-Gulf War female veterans (Kang et. al., Ann Epidemiol, 2001).

- Among a sample of Gulf War veterans collected by University of Iowa investigators, despite no significant differences between genders in environmental exposures, female Gulf War soldiers reported feeling ill at the time of exposure more commonly than male soldiers did (37% of women vs. 20% of men in response to smoke from oil well fires) (Carney et. al., Military Medicine, 2003).
- Divorce was threefold higher among deployed Gulf War veteran women than men (12% vs. 4%), and deployed women were generally more likely than deployed men to be single, never married, or separated (Carney et. al., Military Medicine, 2003).
- Female veterans are about 20 percent more likely than their male counterparts to report musculoskeletal disorders – in some instances caused by the poorly fitting body armor, boots, and gear designed for men's measurements (Hefling, 2011).
- In a study modeling basic combat training, female military members had over twice the injury rate of the males for all injuries, time-loss injuries, and lower extremity overuse injuries (Knapik et. al., Med. Sci. Sports Exerc., 2001)

Auto-immune disorders are another growing area of interest for Gulf War female veterans' health. A number of scientific journals have discussed the effect of exposure to pyridostigmine bromide (PB) in Gulf War veterans. PB, in conjunction with the high psychological stress involved with combat, has been suggested as a cause leading to the multi-symptom Gulf War illnesses. Multiple vaccinations combined with the stress of deployment have also been associated with adverse health outcomes. Sex-based research and analysis into auto-immune responses will be key to providing the best prevention, screening, and treatments:

- In the United States, 8% of the population suffers from an autoimmune disease and 78% of those individuals are women. Women produce a more vigorous immune response than men, manifested in an increased antibody production.
- Although autoimmune diseases occur most often in women when they occur in men, oftentimes the disease severity is greater.
- Sex hormones are thought to mediate most of the sex-biased differences in the immune response, a special medical focus on estrogen, androgen, and progesterone must exist in all new VA research as well. Most auto-immune disorders show vastly improved symptoms during pregnancy, further implication of a hormone-dependant link.

Thus, when considering all diseases, but especially autoimmune disorders, in Gulf War veterans, investigators must consider the distinct susceptibility and response of females and males to similar environmental exposures to stress, PB, vaccinations, and others.

SWHR would like to thank you again for the chance to share this emerging research with the Research Advisory Committee on Gulf War Veterans' Illnesses and to encourage you to continue efforts to fund and initiate research on the topic of female veterans health and to better understand the sex-based differences that affect the health of all of our veterans.

Sincerely,



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